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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/812,215

03/29/2004

Veera Palanivelu Rajendran

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Patrick S. Yoder
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289

EXAMINER

SONG, SARAH U

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,215

Applicant(s)

RAJENDRAN ET AL.

Examiner

Sarah Song

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10,12-15,17-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-10,12-15 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. Applicant's communication filed on December 27, 2005 has been carefully studied by the Examiner. The arguments advanced therein, considered together with the amendments made to the claims, are persuasive and the rejections based upon prior art made of record in the previous Office Action are withdrawn. Claims 1, 10, 12 and 15 are amended. Claims 2, 3, 11 and 16 are canceled. Claims 1, 4-10, 12-15 and 17-21 are pending.
2. The indicated allowability of claims 8, 9 and 12 is withdrawn in view of the newly discovered reference(s) to Carkner (U.S. Patent 6,160,383). Rejections based on the newly cited reference(s) follow.

Claim Objections

3. Claim 10 is objected to because of the following informalities: "the monitored temperature" lacks proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 4-10, 12-15 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carkner (U.S. Patent 6,160,383 newly cited) in view of Helmig et al. (U.S. Patent Application Publication 2001/0022804 previously relied upon).**
6. Regarding claims 1, 4, 15 and 21, Carkner discloses a discloses a temperature monitoring system comprising at least one temperature sensor 22 configured for measuring the temperature

of at least one portion of a battery assembly and generating a measured temperature signal representative thereof; battery temperature monitoring circuitry 42 for monitoring the measured temperature signal from the at least one portion of the battery assembly; battery temperature control circuitry 38 coupled to the battery temperature monitoring circuitry and configured to generate a control signal based upon the measured temperature signal; and a battery charging device 24 coupled to the batter temperature control circuitry and configured for charging the battery assembly based on the control signal. Carkner additionally discloses that the temperature sensor may be an optical sensor (column 3, lines 45-49), but does not expressly disclose the specifics of the optical sensor.

7. Helmig et al. discloses temperature monitoring system for energy-producing or energy-consuming devices comprising an optical sensor. (§0001). The optical temperature sensor 70 is configured for measuring the temperature of at least one portion of a device and generating a measured temperature signal representative thereof, and comprises an optical cable 77 coupled to the sensor and configured for transmitting the measured temperature signal. See §0035.

8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the optical sensor of Helmig et al. for a battery temperature detection circuit of Carkner since Carkner suggest utilization of an optical sensor and for the purpose of providing a high speed communications between the sensor and the corresponding circuitry to optimize battery charging operations.

9. Carkner and Helmig et al. do not expressly disclose a plurality of battery modules, each comprising a plurality of batteries, the temperature monitoring circuitry configured to monitor

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temperature of at least two battery modules or batteries. Battery assemblies comprising a plurality of battery modules and batteries are well known. Fiber optic sensors are well known in the art for providing multiple sensor locations within a circuit. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device as discussed above to monitor temperature of at least two battery modules or batteries for the purpose of providing a complete temperature profile for optimized charging operation of the entire battery assembly. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide plural battery modules and batteries and correspondingly configured circuitry since it has been held that mere duplication of essential working parts requires routine skill in the art.

10. Regarding claims 5 and 17, the sensor comprises a Bragg grating structure 62 etched onto an optical fiber.

11. Regarding claims 6, 7, 18 and 19, Carkner and Helmig et al. do not expressly disclose the temperature sensor disposed outside or inside the battery assembly. However, it is well known in the art to monitor the internal and external temperature of a battery assembly. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the temperature sensor of the assembly on the outside of the battery assembly to ease manufacture and to reduce costs. It also would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the temperature sensor of Helmig et al. on the inside of the battery assembly for the purpose of providing more accurate temperature readings.

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12. Regarding claims 8 and 9, Carkner additionally discloses reference circuitry 40 configured for generating a reference signal and measurement circuitry 42 configured for providing at least one measurement signal of at least the portion of the battery assembly.

13. Carkner does not expressly disclose a laser modulation device for generating a trigger signal or a plurality of fiber optic couplers configured for splitting the laser trigger signal, the fiber optical couplers coupling the laser modulation device to the reference circuitry and the measurement circuitry.

14. However, optical sensors comprising a laser modulation device for generating a trigger signal and a plurality of fiber optic couplers configured for splitting the laser trigger signal, the fiber optical couplers coupling the laser modulation device to the reference circuitry and the measurement circuitry are well known in the art. Therefore, the provision of the components would have been obvious to one of ordinary skill in the art for the purpose of providing requisite components for the optical sensor system.

15. Regarding claims 10, 12-14 and 20, the method claims would also have been obvious for the reasons above as setting forth requisite steps.

Response to Arguments

16. Applicant's arguments with respect to claims 1, 4-10, 12-15 and 17-20 have been considered but are moot in view of the new ground(s) of rejection.

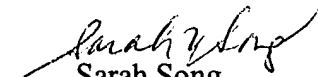
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sarah Song
Primary Examiner
Group Art Unit 2874